

Mental Illness arises epigenetically – like all other diseases.

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“It has become obvious to most active geneticists that the good old days of mapping genes are over. From now on, it seems to me, there must be a phase of integration where the various isolated phenomenon are drawn together and where the biochemical, histochemical, chromosomal, cytological, developmental etc. phases are more clearly integrated. My material may help in making this reevaluation ”

Barbara McClintock, 1950 (Nobel Prize Winner 1983), in a personal letter to Marcus Rhoades¹

A new post-genomic era has started in biology after the completion of Human Genome Project as predicted by the American geneticist Barbara McClintock with more than 50 years in advance (Comfort 2003). We thought that once we mapped all genes of our human specie, we would decipher the main mechanisms of the diseases that afflict us. Now, 15 years after the completion, we clearly understood that the question is far more complicated than the *common sense* reductionist genetic determinism that mysteriously still rules biology and medicine. Ironically, because of this genome map we could verify experimentally that Genes are connected to a lot more other cellular and molecular mechanisms besides the known genetic ones. Waddington (1942) described it as *epigenetic* mechanisms (*above, epi in greek*). (Jablonka 2005)

This is an old question in human thinking. What is the cause of diseases? Internal causes? External causes? Is the environment important? Or inheritance is the most important factor? These are deep questions because they ask what we understand about the world and the processes that generate health and disease. Therefore constructing the scientific models of care that are offered to the world population through public policies. (Pordeus 2013)

In the human genome project we shot what we saw, and got what we didn't see. Several evidences were brought into light showing that every genetic process is integrated into other molecular and cellular processes, genes connected to proteins connected to proteins forming networks that pervade cells, tissues and fluids of the organism. Including our immense community of resident bacteria (95% of the total of our organism's cells are bacteria), our diet, our affective relations, our bodies, families, communities, cities, countries, political destinies, cultural practices that are configured moment to moment historically. This vision in biology is named Epigenetics. It is an extremely important theoretical and practical field that should be receiving full attention in our public health offices, in medical and scientific education, as well as in our biomedical research and development programs (Gilbert 2010). The epigenetic view offers a useful and efficient way to explain health and disease emphasizing interactions between organism and environment,

showing how our actions, our culture and body biology area deeply connected. This would revolutionize and reinforce whole fields of medicine where therapies are excessively pharmaceutical (molecular), mechanic and deterministic. (Gilbert 2010)

For example mental illness that afflict a large part of our population that rely only in psychotropic drugs has produced in population level a rising epidemic of mental diseases and never seen profits records of pharmaceutical industry (Angell 2011). In hegemonic biological paradigm, diseases would be caused by specific reducible cause, such as gene defects, or fails in neuron's elements like the neurotransmitter dopamine or its receptor. They used to say that once we have obtained the map of our genetic unities, we could avoid diseases substituting these unities by healthy ones through genetic engineering. Following the same intellectual framework we use specific chemical substances to correct structural molecular problems like abnormalities in Calcium Channels that cross cellular membranes, controlling the flow of atoms charged electrically to the interior or exterior of cells, realizing molecular movements that ultimately move our bodies and perform our biological functions. Therefore, it is very likely that the psychiatric patient inherited from his own family genetic and structural aberrations that must be corrected with drugs that act upon these molecular defects and eventually electroshocks that will improve bioelectrical activity of the patient's brain. (Kirmayer 2014)

However, the epigenetics field precisely showed that biological destiny is not determined. In opposite, the importance of experience and historical course is immense. And those severe diseases carry severe histories of misery, which leaves marks in the biological body throughout the different generations, accumulating epigenetic alterations until forming very severe clinical forms invariably linked to poverty and misery like those we can observe in our old Psychiatric Hospitals. (WHO 2014)

The good new is that the positive experience developed inside such adverse environments like these Hospices today can be brought to public attention due to contemporary biology oriented by concepts such as epigenetics. This understanding illuminates the role of human culture and experience in the epigenetic occurrence of mental disease, and how symbolic, cultural and political modifications are capable of changing significantly the clinical evolution of even the most severe cases. Experiences of famous psychiatrists such as Nise da Silveira (Silveira N 1992) in Rio de Janeiro, Franco Basaglia (Basaglia 1985) in Italy, Ronald Laing (Laing 1960) in England, our living contemporaries Jacques Arpin (Arpin 2008) in Switzerland and Laurence Kirmeyer (Kirmayer 2014) in Canada, and many others worldwide are in line with the epigenetic paradigm of biology reminding us the that only constancy is changing and, at last, man is the destiny of man. Diseases are cultural and political productions simultaneously expressed through epigenetic historical alterations that mould our bodies. Besides that accumulated scientific evidence demonstrates that we are capable of positively modifying even the most severe chronic psychosis with long-term hospitalization through modifications in relations and space, cultural and political relations, esthetical and ethical relations. It is urgent that this debate be raised publicly because it means what we do understand about ourselves and how we treat our patients and the oppression processes that caused ill conditions. We are in fact

debating democracy in the epigenetics era. An urgent, necessary and possible shift of perspective that integrates the permanent movement of living world, of biology that will certainly adequate us to nature and healthy living.

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